

IN THE ABSTRACT

Please replace the Abstract on page 154 with the following paragraph:

The exposure apparatus comprises a mark plate on which a plurality of types of measurement marks each used for self measurement are formed, a reticle stage on which the mark plate is mounted, and an aerial image measurement unit. On a slit plate of the aerial image measurement unit, a slit is formed extending in the non-scanning direction which width in the measurement direction is equal to and under (wavelength λ /numerical aperture N.A of the projection optical system). Therefore, in a state where a predetermined pattern is illuminated with the illumination light to form an aerial image of the pattern via the projection optical system, and when the slit plate is scanned in the measurement direction with respect to the aerial image, the light having passed through the slit during the scanning is photo-electrically converted with the photoelectric conversion element. And, based on the photoelectric conversion signal, the control unit measures the light intensity corresponding to the aerial image with a sufficiently high accuracy in practical usage. In addition, various self measurements become possible, by moving the reticle stage so as to position the plurality of types of measurement marks respectively in the vicinity of a focal position on the object side of the projection optical system.

A method and apparatus for measuring an aerial image of a mark formed by a projection optical system, the method including the steps of illuminating the mark with an illumination light, forming an aerial image of the mark on an image plane, arranging a pattern forming member which has at least one slit-shaped aperture pattern extending in a first direction within a two dimensional plane perpendicular to an optical axis of the projection optical system, a width of the at least one slit-shaped aperture pattern in a second direction perpendicular to the first direction being set in consideration of at least one of a wavelength λ of the illumination light and a numerical aperture of the projection optical system, scanning the pattern forming member in the second direction, photo-electrically converting the illumination light, and obtaining a photoelectric conversion signal.

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A method and apparatus for measuring an aerial image of a mark formed by a projection optical system, the method including the steps of illuminating the mark with an illumination light, forming an aerial image of the mark on an image plane, arranging a pattern forming member which has at least one slit-shaped aperture pattern extending in a first direction within a two dimensional plane perpendicular to an optical axis of the projection optical system, a width of the at least one slit-shaped aperture pattern in a second direction perpendicular to the first direction being set in consideration of at least one of a wavelength λ of the illumination light and a numerical aperture of the projection optical system, scanning the pattern forming member in the second direction, photo-electrically converting the illumination light, and obtaining a photoelectric conversion signal.